

Amendments to the Drawings

An additional drawing sheet, which is presented in **Attachment A**, includes added Fig. 7. Added Fig. 7 addresses objections made by the Examiner in the present Office Action. Specifically, added Fig. 7 shows the feature of a “porous metal sintered body layer.” No new matter is added.

REMARKS

Reconsideration of the application in light of the amendments and the following remarks is respectfully requested.

Status of the Claims

Claims 1, 3-9, 15-17 and 21-27 are pending. Claim 28 is canceled without prejudice or disclaimer of the subject matter contained therein. Claims 2, 10-14 and 18-20 were canceled by prior amendment. Claims 1, 3, 4, 6-9, 15-17, 21-24 and 26-27 have been amended. No new matter has been added.

Status of the Specification

The Examiner has objected to the drawings for not showing every feature of the claimed invention. Figure 7 has been added to show the feature of a “porous metal sintered body layer.” Support for this can be found at page 10, lines 15-22 of the as-filed specification. No new matter has been added.

The Examiner has objected to the Specification for containing informalities. The Examiner has also objected to the title of the invention as being not descriptive, and objected to the manner in which TEFLON™ is referenced in the application. These informalities also have been addressed by appropriate amendment of the Specification. Applicant requests reconsideration of this objection.

Objections to Claims

Claims 1, 3-9, 15-17, and 21-28 stand objected to because of informalities. Applicant submits that appropriate amendment has been made. Applicant respectfully requests reconsideration of the objection.

Rejections Under 35 U.S.C. § 112, second paragraph

Claims 1, 3-9, 15-17, and 21-28 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claim 28 has been canceled, thus rendering the rejection moot with respect to claim 28.

Applicant has amended claims 1, 3-4, 7-9, 15-17, 21-23, and 26 to address the Examiner's comments on pages 4-6 of the Office Action. Dependent claims 5-6, 24, 25, and 27 depend from an amended claim.

Claim 8 stands rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting the structural cooperative relationship between the compression units and the hollow tube. Applicant has amended claim 8 to recite this structural cooperative relationship. Support for this can be found in FIG. 3 and page 9, line 25 to page 10, line 7 of the specification. FIG. 3 shows compression unit 54 as a protrusion on the inner surface of hollow tube 50, and as a depression on the outer surface of hollow tube 50. The operative parts of the compression units 54 are on the inner surface of the hollow tube 50, in order to control the flow of refrigerant between the hollow tube 50 and the hollow electrode 20 (page 10, lines 1-7).

Applicant respectfully requests reconsideration and withdrawal of the rejection.

Rejections Under 35 U.S.C. § 103

Claims 1, 3, 6, 7, 15, 21, 22, and 26-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,514,251 to Ni *et al.* (“Ni”) in view of U.S. Patent No. 6,969,373 to Schwartz *et al.* (“Schwartz”). Claim 28 has been canceled, thus rendering the rejection moot with respect to claim 28. Applicant respectfully traverses this rejection. The refrigerant tube 30 of the present invention has a very small diameter of 0.4 mm, requiring a very high pressure to recirculate refrigerant and provide a resisted release (p.8, lines 15-17). Without a resistance to the release, refrigerants would be explosively spouted (p.8, lines 18-21). In contrast, the electrode of Ni has a relatively large diameter of approximately 3 mm (col. 4, lines 8-9), thus Ni is a relatively lower pressure design. Schwartz provides unresisted release under low pressure of the entire fluid within Schwartz’s syringe, without recirculation (FIGs. 10-11). Therefore, there is no motivation to combine the relatively low pressure design of Ni with the unresisted release of Schwartz in order to provide the high-pressure resisted release design of the claimed invention.

Applicant further submits that the structure of Schwartz cannot form a flow control mechanism of the claimed invention. Independent Claim 1 as amended recites “a flow control mechanism . . . operable to act as a discharge resistance to the refrigerants discharged from the at least one first hole, so as to control a flow of the refrigerants.” The specification describes the operation of the discharge resistance as “[s]ome of the refrigerants are discharged through the first hole 22, and externally discharged through the third hole 52 and/or both ends of the hollow tube 50 via the discharge resistances by the compression units 54 on the discharge passage” (page 12, line 26 - page 13, line 3 of the as-filed application). Therefore, the “discharge resistance” of the claimed invention impedes discharge of a portion of the refrigerant.

In contrast, Schwartz discloses that when a sheath is over a hole, “the hole is occluded and substantially no injectate is allowed to flow therefrom” (col. 16 line 67 - col. 17 line 1). When the sheath is not directly over a hole, there is no resistance to the flow of injectate from the hole (FIG. 11). Therefore, Schwartz does not disclose, or suggest, a “flow control mechanism . . .

operable to act as a discharge resistance” recited in Claim 1 which impedes the discharge of refrigerant but does not entirely occlude the openings. Claims 3, 6, 7, and 15 depend on Claim 1, and include the limitations of their base claim as if set forth therein, and are allowable at least for the reasons presented above.

Independent Claim 21 as amended recites “a refrigerant discharging mechanism ... operable to externally discharge a portion of the circulated refrigerants ... by acting as a discharge resistance to the refrigerants.” The refrigerants “are infused into the hollow electrode 20 under a very high pressure” (page 7, line 18 of the as-filed application), with the very high pressure necessary in order to circulate refrigerants within the hollow electrode, and between the hollow electrode and the living tissue. See also page 10, lines 2-4, which describes that the discharge resistance efficiently controls the flow of refrigerants “discharged under a high pressure.”

However, Schwartz does not disclose a mechanism for discharging a portion of the circulated refrigerants into the living tissue by acting as a discharge resistance. Rather, in Schwartz the entire fluid introduced through the catheter with relatively low pressure is discharged out of the electrode into the living tissue. Therefore, there is no motivation to combine the high-pressure recirculating design of Ni with the low-pressure sheath of Schwartz to produce the claimed “refrigerant discharging mechanism.” Claim 22 depends on Claim 21, and include the limitations of their base claim as if set forth therein, and are allowable at least for the reasons presented above.

Applicant respectfully requests reconsideration and withdrawal of the rejection over Ni in view of Schwartz.

Claims 9 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ni Schwartz as applied to Claims 1 and 21, and further in view of U.S. Patent No. 6,017,338 to Brucker *et al.* (“Brucker”). Applicant respectfully disagrees with the Examiner and traverses this rejection. Applicant respectfully submits that at least the discussion presented above with respect to the rejection of Claims 1 and 21 shows that combination of Ni and Schwartz fail to provide “a flow

control mechanism [operating] as a discharge resistance” as claimed in Claim 1, or “a refrigerant discharging mechanism … operable to externally discharge a portion of the circulated refrigerants … by acting as a discharge resistance” as claimed in Claim 21. Claims 9 and 25 depend on Claims 1 and 21, respectively, and include the limitations of their base claim as if set forth therein, and are allowable at least for the reasons presented above.

Applicant respectfully requests reconsideration and withdrawal of the rejection over Ni in view of Schwartz and further in view of Brucker.

Claims 4-5, 16-17, and 23-24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ni Schwartz as applied to Claims 1, 3, 6, 7, 15, 21, and 21, and further in view of U.S. Patent Application No. 2003/0208194 A1 to Hovda *et al.* (“Hovda”). Applicant respectfully disagrees with the Examiner and traverses this rejection. Applicant respectfully submits that at least the discussion presented above with respect to the rejection of Claims 1 and 21 shows that combination of Ni and Schwartz fail to provide the claimed invention. Claims 4-5, 16-17, and 23-24 depend on Claims 1 and 21 and include the limitations of their base claim as if set forth therein, and are allowable at least for the reasons presented above.

Applicant respectfully requests reconsideration and withdrawal of the rejection over Ni in view of Schwartz and further in view of Hovda.

CONCLUSION

Each and every point raised in the Office Action dated March 7, 2007 has been addressed on the basis of the above amendments and remarks. In view of the foregoing it is believed that Claims 1, 3-9, 15-17 and 21-27 are in condition for allowance and it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

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Respectfully submitted,

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Attachment A: Additional Drawing Sheet